

Datex-Ohmeda

Video Display, D-VNC15 (Rev. 03)

S/5™ Video Display, D-VMC15 (Rev. 00)

Video Display, D-VHC17 (Rev. 02)

S/5™ 21" Display Monitor Unit, D-VSC21 (Rev. 01)

S/5™ LCD Display, D-LCC10A/W (Rev. 01)

S/5™ LCD Display, D-LCC15 (Rev. 00)

S/5™ Display Controller Board, B-DISP (Rev. 01)

Technical Reference Manual

All specifications are subject to change without notice.

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INTRODUCTION

This section provides information about the maintenance and service of the following products:

- LCD Displays, D-LCC10A/W, D-LCC15
- Display controller board, B-DISP

Service Manual for Video Displays D-VMC15, D-VNC15, D-VHC17, and D-VSC21 is not available.

1 SPECIFICATIONS

1.1 Video Display, D-VMC15 (Rev. 00)

Dimensions

W × D × H	339 × 432 × 366 mm
Weight	15 kg

CRT

Diagonal	15"
Face treatment	Black matrix with anti-reflection, antistatic
Deflection angle	90 °
Phosphor	P22
Aperture grille pitch	0.28 mm

Resolution

Horizontal × Vertical	1024 × 768 / 75 Hz
-----------------------	--------------------

Electrical Requirements

Line voltage	AC, 90...264 V, 47... 63 Hz
Power consumption	< 110 W

Environmental Requirements

Ambient temperature:	
Operating	+0 °C...+40 °C
Packed	-20 °C...+65 °C
Relative humidity:	
Operating	10 %...95 %, non- condensing

1.2 Video Display, D-VNC15 (Rev. 03)

Dimensions

W × D × H	362 × 400 × 381 mm
Weight	14 kg

CRT

Diagonal	15"
Face treatment	non-glare, antistatic
Deflection angle	90 °
Phosphor	P22
Aperture grille pitch	0.25 mm

Resolution

Horizontal × Vertical	1024 × 768
-----------------------	------------

Electrical Requirements

Line voltage	AC, 90...264 V, Autosense, 50/60 Hz
Power consumption:	
Normal operation	< 100 W
Stand-by	~ 70 W
Suspend	< 15 W
Auto power off	< 5 W

Environmental Requirements

Ambient temperature:	
Operating	+10 °C...+40 °C
Packed	-20 °C...+60 °C
Relative humidity:	
Operating	15 %...85 %
Packed	5 %...95 %

1.3 Video Display, D-VHC17 (Rev. 01)

Dimensions

W × D × H	410 × 465 × 429 mm
Weight	22 kg

CRT

Diagonal	17"
Face treatment	Black matrix, invar shadow mask, Anti-Reflection coat
Deflection angle	90 °
Phosphor	Short persistence phosphors
Aperture grille pitch	0.22 mm (optional 0.24 mm)

Resolution

Horizontal × Vertical	1280 × 1024
-----------------------	-------------

Electrical requirements

	See power connection requirements related to S/5 systems from <i>Part I/Installation</i> .
Line voltage	AC, 110...120/200...240 V, automatically select. Provided with power save circuit.
Power consumption	110 W (nominal)
Warm-up time	30 minutes to reach optimum performance level.

Environmental requirements

Ambient temperature:	
Operating	+10 °C...+30 °C
Storage	-20 °C...+60 °C
Relative humidity:	
Operating	10 %...80 %
Storage	10 %...90 %

1.4 Video Display, D-VHC17 (Rev. 02)

Dimensions

W × H × D	412 × 402 × 413.5 mm
Weight	17.0 kg/37 lbs (app.)

CRT

Diagonal	17"
Face treatment	ARASC coating
Deflection angle	90 °
Aperture grille pitch	0.26 mm (optional 0.28 mm) dot-pitch

Resolution

Horizontal × Vertical	1600 × 1200
-----------------------	-------------

Electrical requirements

See power connection requirements related to AS/3 and CS/3 systems from *Part I/Installation*.

Power supply	90...132 VAC, 60/50 Hz, 2.0 A 180...264 VAC, 60/50 Hz, 1.2 A (auto select)
Power consumption	135 W max.

Environmental requirements

Ambient temperature: Operating	+5 °C...+35 °C
Relative humidity: Operating	10 %...80 %

1.5 21" Display Monitor Unit, D-VSC21 (Rev. 02)

Dimensions

W × D × H	515 × 544 × 490 mm
Weight	31 kg

CRT

Diagonal	53.3 cm/21" full square
Face treatment	CRT with invar shadow mask,
Dot pitch	0.28 mm/0.22 horizontal

Resolution

Horizontal × Vertical	1280 × 1024 @ 90 Hz 1600 × 1280 @ 76 Hz
-----------------------	--

Electrical requirements

Line voltage	AC, 90...260 V / autosense, 50/60 Hz
Power consumption	< 160 W

Environmental requirements

Ambient temperature:	
Operating	+10 °C...+40 °C
Storage	-20 °C...+60 °C
Relative humidity:	
Operating	15 %...85 %
Storage	5 %...95 %

1.6 LCD Display, D-LCC10 A/W

Display size	10.4 in
Display type	Active Matrix Color LCD Display
Resolution	640 × 480 × (R,G,B)

Dimensions

Outline (ComWheel™ included)	
W × D × H	315 × 74 × 265.5 mm / 12.4 × 2.9 × 10.5 in
Weight	3.5 kg / 7.7 lb

Electrical requirements

All LCD displays listed can be connected to B-DISP Display controller boards.

Power consumption	14 W
-------------------	------

Environmental Requirements

Operating temperature	+10...+35 °C / 50-95 °F
Storage temperature	-10...+50 °C / 14-122 °F
Atmospheric pressure	660...1060 hPa (660...1060 mbar)
Humidity	0...85 % non-condensing

1.7 LCD Display, D-LCC15 (Rev. 00)

Display size	15 in diagonal
Display type	Active Matrix Color TFT LCD Display
Resolution	XGA, 1024 x 768

Dimensions

Outline (ComWheel™ included)	
W × D × H	410 x 100 x 355 mm
Weight	5 kg

Electrical requirements

All LCD displays listed can be connected to B-DISP Display controller boards.

Line Voltage	AC, 90 ... 264 V, 47 ... 63 Hz
--------------	--------------------------------

Power consumption:

ON	40 W
Stand-by	5 W
Suspend	5 W

Environmental Requirements

Operating temperature	+0...+40 °C
Storage temperature	-20...+65 °C
Atmospheric pressure	660...1060 hPa (660...1060 mbar)
Humidity	10...95 %

1.8 Display Controller Board, B-DISP

Video output: both connectors and both resolutions, analog RGB, 0.2V - 1.1V, 0,8 V_{pp}, 75 ohm

Output data

High resolution

Resolution	1984 × 512 pixels
Frame frequency	65 Hz
Scan frequency	34.7 kHz
Dot frequency	80 MHz max.
Sync polarity	H/negative, V/negative, level TTL
Sync pulse:	

	Horizontal	Vertical
Front porch	0.40 μs	57.6 μs
Sync period	1.20 μs	115.2 μs
Back porch	2.40 μs	460.8 μs

VGA resolution

Resolution	640 × 480 pixels
Frame frequency	60 Hz
Scan frequency	31.6 kHz
Dot frequency	25 MHz max.
Sync polarity	H/negative, V/negative, level TTL
Sync pulse:	

	Horizontal	Vertical
Front porch	0.640 μs	0.349 ms
Sync period	3.520 μs	0.063 ms
Back porch	1.920 μs	1.019 ms

High resolution (Japan)

Resolution	1600 × 600 pixels
Frame frequency	67 Hz
Scan frequency	41.7 kHz
Dot frequency	80 MHz max.
Sync polarity	H/negative, V/negative, level TTL
Sync pulse:	

	Horizontal	Vertical
Front porch	0.40 μs	57.6 μs
Sync period	1.20 μs	115.2 μs
Back porch	2.40 μs	460.8 μs

2 FUNCTIONAL DESCRIPTION

2.1 Video Displays D-VMC15, D-VNC15, D-VHC17 and D-VSC21

The displays are suitable for high end applications using graphical interface. The adjustments and selections are carried out through displays' internal menus. The displays synchronize and adjust automatically with a wide range of scanning frequencies.

The power supply section of the displays does not contain separating transformer, except D-VHC17 rev. 00-01 does. Therefore, the power for the other displays should be supplied via F-CU8 or via an external separating transformer.

All the displays contain a degaussing (demagnetisation) circuitry. Degaussing takes place automatically when the monitor is turned on, however, the degaussing can be activated also manually during an operation, if necessary.

2.2 LCD display



NOTE: The LCD display backlight circuit runs on a high voltage. Do not touch the adapter board when powered.

LCD Display, D-LCC10 includes LCD display module, LCD interface board, and keyboard. The display keyboard works independent of the main keyboard.

LCD Display, D-LCC15 includes LCD display module and LCD interface board.

The LCD Display is connected to B-DISP Display controller board in the monitor frame with the LCD display interface cable. The interface cable is available as an accessory. See accessory catalogue.

Video signalling between the Display controller board B-DISP and the LCD Display takes place in analog form. Incoming signals are buffered in the Interface board, converted into digital form, and fed forward to the LCD Display module.

Communication between the Display controller board and the Command board takes place in RS232 serial communication channel D.

NOTE: D-LCC10A/C and D-LCC15 require B-DISP.

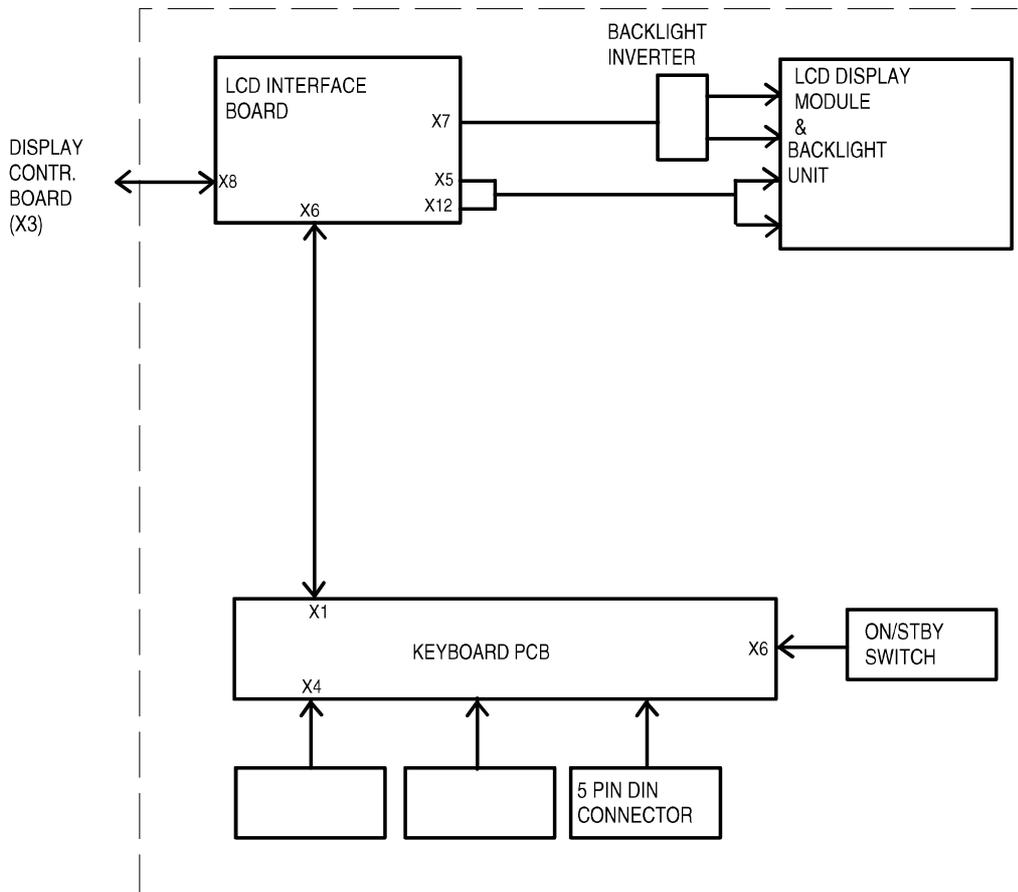


Figure 1 General block diagram, D-LCC10A/C (rev. 01)

2.2.1 LCD interface board

The LCD Interface board is the interface between the display controller board and the LCD display component. The keyboard is also connected to the Interface board, see figure 1.

The incoming signal to LCD Interface board is pure analog VGA - RGB with separate horizontal and vertical synchronisation signals, see figure 2. The display element uses digital RGB-signals, HSYNC, VSYNC, DOTCLK and a display timing signal DTMG. The DTMG signal indicates that the digital RGB-signals are active.

The functions of this board are digitalization of the video signals, regeneration of the DOTCLK and generation of the DTMG. The backlight driver is also located on the board.

Power supply, D-LCC10A/C

The DC/DC power supply is an isolated discontinuous mode flyback switcher. It has a current mode PWM circuit and a separate FET switch on the primary side. The transformer has two secondary windings, one for 5V and another for 12V. On the secondary side (5V), there is a separate chip on the feedback path to drive the optoisolator.

Backlight unit, D-LCC10A/C

The backlight unit consists of two changeable tubes fed by separate inverter board.

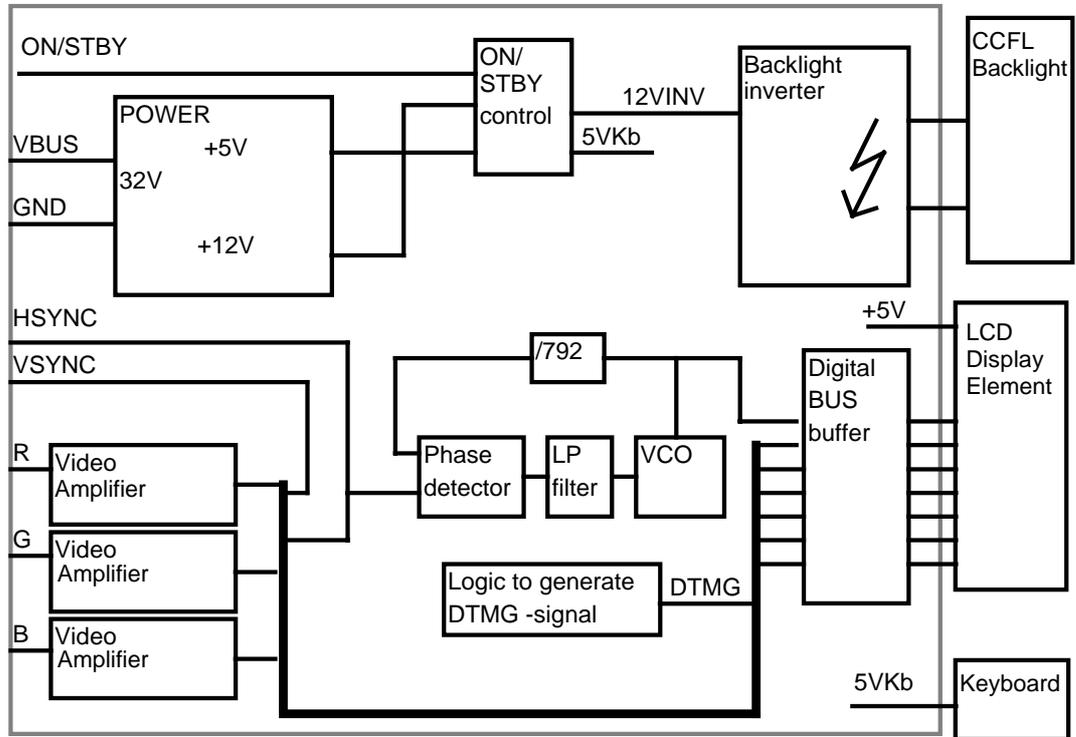


Figure 2 LCD interface board block diagram, D-LCC10A/C

2.3 External connector configurations

Main connector on LCD display, D-LCC10A/W

Pin No	I/O	Signal	Notes
1	I	Dirty Ground	
2	I	Intensity	
3	I	Hsync2	horiz. Deflect
4	I	Vsync2	vert. Deflect
5	I	Contrast	
6	I	+32 Vdd	
7	I	GND	
8	O	RXDD RS232	from keyboard
9	I	TXDD RS232	to keyboard
10	I	ON/STBY	active GND
A1	I	BLUE GND & BLUE VIDEO 2	
A2	I	GREEN GND & GREEN VIDEO2	
A3	I	RED GND & RED VIDEO2	

Connector on D-LCC15 and D-VMC15, on D-VNC15 and on D-VHC17

Pin No		Signal	
1	<-	RV	Red
2	<-	GV	Green
3	<-	BV	Blue
4	->	ID2	Monitor Identification (LG)
5	<-	ST	Self test
6	<-	RG	Ground (red)
7	<-	GG	Ground (green)
8	<-	BG	Ground (blue)
9	-	-	-
10	-	LG	Ground (logic)
11	->	IDO	Monitor Identification (LG)
12	->	ID1	Monitor Identification (N.C.)
13	<-	HS	Horizontal sync.
14	<-	VS	Vertical sync.
15	-	-	Not used

Connector at the end of interface cable (Display Controller Board side)

Pin No	I/O	Signal	Note
1	0	RED VIDEO2	not used
2	0	GREEN VIDEO2	
3	0	BLUE VIDEO2	
4		BLANK	
5			chassis
6	0	GND	
7			horiz. deflect
8	0	Hsync2	
9	0	Vsync2	vert. deflect
10	0	RED GND	chassis
11	0	GREEN GND	
12	0	BLUE GND	
13	0	GND	
14	0	DCLK GND	active GND
15		not connected	
16		ON/STBY	from keyboard
17	0	Dirty GND	
18	0	Dirty GND	to keyboard
19	1	RXDD RS232	
20	0	TXDD RS232	
21		not connected	
22		not connected	
23		not connected	
24		not connected	
25	0	+32 Vdd	
26	0	+32 Vdd	

2.4 Display Controller Board, B-DISP

B-DISP board is connected to the CPU Mother board. The processor on the CPU board transmits program through the CPU bus to B-DISP board.

B-DISP board includes the functions of both B-DHIGH and B-DVGA boards. Thus, B-DISP board supports both high resolution and VGA resolution. The resolution is automatically selected based on monitor ID codes. The resolution is set to 640x480 if a VGA resolution display is used, otherwise the resolution is set to 1984x512.

NOTE: S-ANE97/98/99, S-ICU97/98/99 and S(L)-ARK97/98/99 softwares support B-DISP, B-DHIGH and B-DVGA boards. If, however, B-DISP board is used to drive D-VHC14 display, a small part of the resulting picture will be clipped.

System memory

The system memory contains the GSP software code. The memory consists of two 256k x16 memory banks.

Frame memory

The frame memory contains digital display data. The size of the memory is 1 MB making 1984 x 512 display resolution with 256 colors possible. The memory consists of four 256k x 8 VRAM memory circuits.

Video interface palette

The video interface palette reads the digital display data from the frame memory and converts the data into analog RGB-signals. The synchronization signals for the conversion are generated by the GSP.

The video interface palette is clocked by two pixel clocks. A 25 MHz clock is selected for VGA resolution and a 40 MHz clock is selected for high resolution. The 40 MHz clock is internally converted into a 80 MHz clock.

Graphics System Processor (GSP)

There are four 16-bit registers in the GSP, from which the host-processor reads and to which it writes data.

Display Controller Resolution

The resolution of the display controller depends on initialization of the GSP's registers and frequency of the video oscillator.

Reset Signal

Reset signal comes from the power supply unit through the CPU bus.

Monitor ID register

The monitor ID register contains a three bit (numeric values 0-7) monitor ID code. The register is connected to channels 11-13 of the X3 D-connector. If no display is connected to B-DISP board or if the monitor ID code fails, 111 code is generated by pull-up resistors. If the ID code is 011 or 101, VGA resolution is selected, otherwise high resolution is selected.

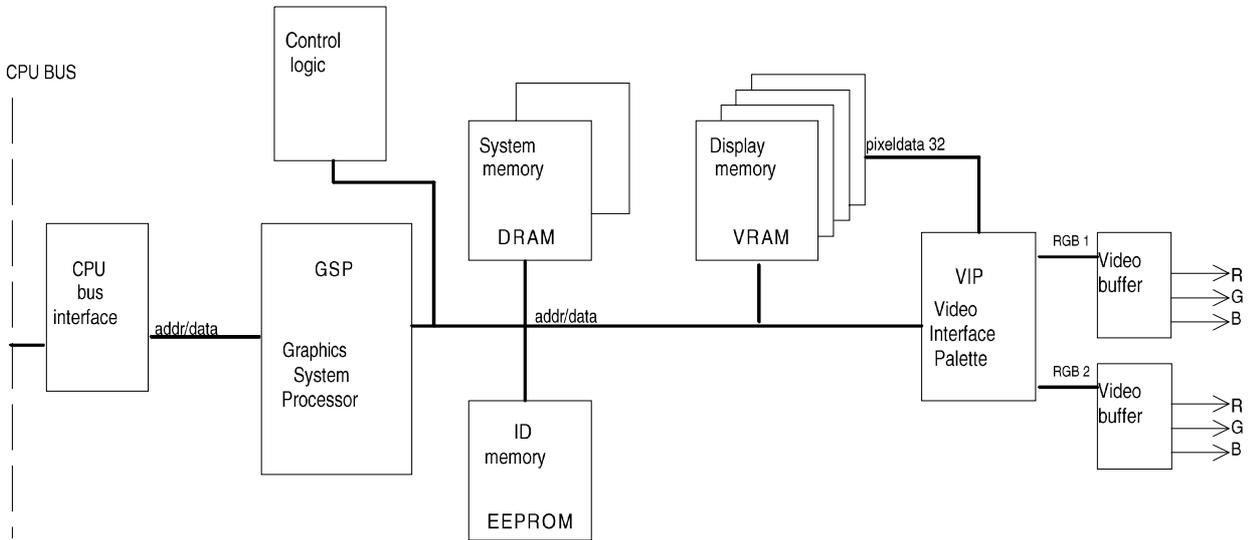


Figure 3 Display Controller Board, B-DISP, block diagram

2.4.1 Connectors and signals

15-pin D-connector on Display Controller Board, B-DISP, X2

Pin No	I/O	Signal	Note
1	0	RED VIDEO 1	analog
2	0	GREEN VIDEO 1	analog
3	0	BLUE VIDEO 1	analog
4		MON1ID2	monitor identification
5	0	GND	
6	0	RED GND	
7	0	GREEN GND	
8	0	BLUE GND	
9		N/C	
10	0	SYNC GND	
11		MON1ID0	monitor identification
12		MON1ID1	monitor identification
13	0	HSYNC 1	TTL, CMOS
14	0	VSYNC 1	TTL, CMOS
15		N/C	

26-pin D-connector on Display Controller Board, B-DISP

Pin No	I/O	Signal
1	0	Red video (analog)
2	0	Green video (analog)
3	0	Blue video (analog)
4	I	MON2ID2
5	I	MON2ID1
6	0	Ground
7	I	MON2ID0
8	0	Horizontal sync
9	0	Vertical sync
10	0	Red ground
11	0	Green ground
12	0	Blue ground
13	0	Ground
14	0	Ground/Sync ground
15	0	+5 V
16	I	ON/STBY
17	0	Ground
18	0	Ground
19	I	RxD RS232
20	0	TxD RS232
21	0	Brightness
22	0	Contrast
23	0	Audbufout
24		Not connected
25	0	+32 Vd
26	0	+32 Vd

3 SERVICE PROCEDURES

3.1 General service information

Field service is limited to replacing faulty circuit boards or mechanical parts. The circuit boards are then returned to Datex-Ohmeda for repair.

Datex-Ohmeda Technical Services is always available for service advice. Please provide the unit serial number, full type designation and a detailed description of the fault.

CAUTION The tests and repairs outlined in this section should only be attempted by trained personnel with the appropriate equipment. Unauthorized service may void warranty of the unit.

3.1.1 Video Display, D-VMC15

Field service is limited to basic adjustments through the display's keys and to replacing mechanical parts of the display stand.

In case of a display failure contact Datex-Ohmeda Technical Services for a possibility to repair the display at a local repair company.

The display can always be returned to Datex-Ohmeda for repair.

3.1.2 Video Display, D-VNC15

Field service is limited to basic adjustments through the display's keys and to replacing mechanical parts of the display stand.

In case of a display failure contact Datex-Ohmeda Technical Services for a possibility to repair the display at a local repair company.

The display can always be returned to Datex-Ohmeda for repair.

3.1.3 Video Display, D-VHC17

Field service is limited to basic adjustments through the display's keys and to replacing mechanical parts of the display stand.

The display should be returned to Datex-Ohmeda for repair.

3.1.4 Video Display, D-VSC21

Field service is limited to basic adjustments through the display's keys.

The display should be returned to Datex-Ohmeda for repair.

3.1.5 LCD Display, D-LCC10A/W

The backlight tubes (2 pcs) are replaceable.

3.1.6 LCD Display, D-LCC15

The backlight tubes (2 pcs) are replaceable in some models.

3.2 Service check

These instructions include complete procedures for a service check. The service check is recommended to be performed after any service repair. However, the service check procedures can also be used for determining possible failures.

The procedures should be performed in ascending order.

The instructions include a check forms (*Appendix A-E*) which should be filled in when performing the procedures.

The mark  in the instructions means that the check form should be signed after performing the procedure.

The procedures are designed for monitors with S/5 monitor software of revision 01. However, most of the procedures also apply to monitors, which contain some other monitor software type/revision.

3.2.1 Video Display, D-VMC15

Tools needed Command Board, Central Unit, B-DISP, parameter modules, keyboard (K-ANEB/K-ICUB)

- Turn the monitor to STBY.
- 1. Check that the display cover and the picture tube screen are intact.

- 2. Check that the display power cord is locked to the display with a power cord guard.

- 3. Disconnect the display power cord from the power supply unit and check that the connector pins are clean and straight. Check that the power cord is intact. Reconnect the power cord properly.

- 4. Disconnect the display video cable from the B-DISP and check that the connector pins are clean and straight. Check that the video cable is intact. Check that the thumb screws on the video cable connector are intact. Reconnect the video cable and lock it properly.

- 5. Turn the monitor on. Check that the power-on indicator LED on the display front panel lights up.

- Prepare the picture for adjustments by pushing the menu key HELP on the Command Board and removing one of the connected plug-in modules from the Central Unit. Wait until the message regarding the removed module appears onto the monitor screen.

6. Remove the keyboard (K- ANEB or K-ICUB)

7. Contrast and brightness adjustments:

Check that the contrast of the colors is changing with contrast control knob . Leave the adjustment to a suitable level.

Perform the same steps also for BRIGHTNESS.



8. Position adjustments:

Go to MAIN MENU (First push button on the left) and select GEOMETRY and vertical centring (See function of push button on the screen).

Check that the vertical centring of the picture is changing with the keys + and - . Leave the adjustment to a suitable level.

Perform the same steps also for horizontal centring, height and width .

Go back to MAIN MENU



9. Color temperature adjustments:

Select COLOR and COLOR TEMPERATURE.

Check that the colors on the screen are changing with the keys + and - . Leave the adjustment to a suitable level.

Perform the same steps also for RED and BLUE.



10. Light sensor.

Select SPECIAL on MAIN MENU. Check that light sensor is ON.

Cover the hole on the right side of the screen with your finger and wait few seconds. Check that the contrast on the screen change and remove your finger. Check that the contrast on the screen change back to normal.

Go back the normal screen.



11. Perform electrical safety check and leakage current test.



12. Check that the display functions normally after the performed electrical safety check.



13. Clean the picture tube with a clean, soft cloth dampened with suitable cleaning solution.

NOTE: Do not use any abrasives or hard objects to remove stains. Do not polish the screen.

Clean the display cover with a cloth dampened with a mild detergent solvent.

NOTE: Do not use strong solvents (e.g. acetone) or aerosol cleaners for cleaning the cover.



- Fill in all necessary documents.

3.2.2 Video Display, D-VNC15

Tools needed Command Board, Central Unit, B-DISP, parameter modules

- Turn the monitor to STBY.
14. Check that the display cover and the picture tube screen are intact.



15. Check that the display power cord is locked to the display with a power cord guard.



16. Disconnect the display power cord from the power supply unit and check that the connector pins are clean and straight. Check that the power cord is intact. Reconnect the power cord properly.



17. Disconnect the display video cable from the B-DISP and check that the connector pins are clean and straight. Check that the video cable is intact. Check that the thumb screws on the video cable connector are intact. Reconnect the video cable and lock it properly.



18. Turn the monitor on. Check that the power-on indicator LED on the display front panel lights up.



- Prepare the picture for adjustments by pushing the menu key HELP on the Command Board and removing one of the connected plug-in modules from the Central Unit. Wait until the message regarding the removed module appears onto the monitor screen.

19. Position adjustments:

Select VERT CENTRING with the keys SELECT and ADJUST.

Check that the vertical centring of the picture is changing with the keys ADJUST. Leave the adjustment to a suitable level.

Perform the same steps also for HOR CENTRING.



20. Size adjustments:

Select HEIGHT.

Check that the height of the picture is changing with the keys ADJUST. Leave the adjustment to a suitable level.

Perform the same steps also for WIDTH.



21. Shape adjustments:

Select PINCUSHION.

Check that the shape of the picture is changing with the keys ADJUST. Leave the adjustment to a suitable level.

Perform the same steps also for TRAPEZOID and ORTHOGONALITY.



22. Tilt adjustment:

Select TILT.

Check that tilting of the picture is changing with the keys ADJUST. Leave the adjustment to a suitable level.



23. Degaussing:

Select DEGAUSSING with the keys SELECT then push the key ADJUST (+) or (>). Check that the picture on the screen sways briefly with a subdued sound

NOTE: Degaussing (demagnetisation) takes place automatically when the monitor is turned on. The efficiency of a single degaussing phase decreases if repeated at intervals shorter than 15 minutes.



24. Color temperature adjustments:

Select COLOR or COLOR TEMPERATURE with the keys SELECT and ADJUST.

Check that the colors on the screen are changing with the keys ADJUST. Leave the adjustment to a suitable level.

Perform the same steps also for RED, BLUE and GREEN (the last adjustment only in Rev. 00-02 displays).



25. Contrast mode selection:

Select CONTRAST MODE.

Check that the contrast mode is turning on and off with the keys ADJUST. Leave the selection into a suitable mode.



26. Perform electrical safety check and leakage current test.



27. Check that the display functions normally after the performed electrical safety check.



28. Clean the picture tube with a clean, soft cloth dampened with suitable cleaning solution.

NOTE: Do not use any abrasives or hard objects to remove stains. Do not polish the screen.

Clean the display cover with a cloth dampened with a mild detergent solvent.

NOTE: Do not use strong solvents (e.g. acetone) or aerosol cleaners for cleaning the cover.



29. Fill in all necessary documents.

-

3.2.3 Video Display, D-VHC17

Tools needed Command Board, Central Unit, B-DISP and parameter modules

- Turn the monitor to STBY.
1. Check that the display cover and the picture tube screen are intact.

 2. Check that the display power cord is locked to the display and display tray with a power cord guard.

 3. Disconnect the mains power cord from the display tray. Check that the pins on the display tray connector are clean and straight. Check that the power cord is intact.

Leave the power cord disconnected.


 4. Detach the primary fuse holder from the mains power receptacle. Check that the fuse compartment, the fuse holder and the fuses are clean and intact. Check also that the fuses are of the correct rating.

Check also the secondary fuse, the secondary fuse holder and compartment.

Reattach the fuses properly and reconnect the mains power cord.


 5. Disconnect the display video cable from the B-DISP and check that the connector pins are clean and straight. Check that the video cable is intact. Check that the thumb screws on the video cable connector are intact.

Reconnect the video cable and lock it properly.


 6. Turn the monitor on. Check that the power-on indicator LED on the display front panel lights up (the display power switch should be in ON-position).

- Prepare the picture for adjustments by pushing the menu key HELP on the Command Board and removing one of the connected plug-in modules from the Central Unit. Wait until the message regarding the removed module appears onto the monitor screen.

7. Contrast and brightness adjustments:

Activate the contrast adjustment by pushing the key ADJUST (-) or ADJUST (+).

NOTE: When the function LED is light up, push the key FUNCTION before adjusting contrast and brightness.

Check that the contrast of the colors is changing with the keys ADJUST (-) and ADJUST (+). Leave the adjustment to a suitable level.

Perform the same steps for brightness adjustment with SELECT (-) and SELECT (+) keys.

NOTE: The contrast and brightness adjustments are stored automatically after 15 seconds from the last change.



8. Position adjustments:

Press the key FUNCTION. Select the horizontal position adjustment by pushing the key SELECT (-/+). Adjust the position by pushing the key ADJUST (-/+). Store the adjustment by pushing the key STORE.

Adjust the vertical position correspondingly.



9. Size adjustments:

Press the key FUNCTION. Select the horizontal size adjustment by pushing the key SELECT (-/+). Adjust the size by pushing the key ADJUST (-/+). Store the adjustment by pushing the key STORE.

Adjust the vertical size correspondingly.



10. Shape adjustments:

Press the key FUNCTION. Select the pincushion adjustment by pushing the key SELECT (-/+). Adjust the pincushion by pushing the key ADJUST (-/+). Store the adjustment by pushing the key STORE.

Adjust the trapezoid correspondingly.



11. Rotation adjustment:

Press the key FUNCTION. Select the rotation adjustment by pushing the key SELECT (-/+). Adjust the rotation by pushing the key ADJUST (-/+). Store the adjustment by pushing the key STORE.



12. Degaussing:

Press the key DEGAUSS. Check that the picture on the screen sways briefly with a subdued sound

NOTE: Degaussing (demagnetisation) takes place automatically when the monitor is turned on. The efficiency of a single degaussing phase decreases if repeated at intervals shorter than 10 minutes.



13. Color adjustments:

Press the key FUNCTION. Select the color adjustments by pushing the key SELECT (-/+). Adjust the colors by pushing the key ADJUST (-/+). Store the adjustments by pushing the key STORE.



14. Perform electrical safety check and leakage current test.



15. Check that the display functions normally after the performed electrical safety check.



16. Clean the picture tube with a cloth dampened with isopropyl alcohol.

NOTE: Do not use water with any kind of detergent for cleaning the picture tube. Do not use any abrasives or hard objects to remove stains.

Clean the display cover with a cloth dampened with a mild detergent solvent.

NOTE: Do not use strong solvents (e.g. acetone) or aerosol cleaners for cleaning the cover.



- Fill in all necessary documents.

3.2.4 Video Display, D-VSC21

Tools needed Command Board, Central Unit and parameter modules

- Turn the monitor to STBY.

1. Check that the display cover and the picture tube screen are intact.



2. Check that all display screws are tightened properly.



3. Check that the display power cord is intact.



4. Disconnect the display video cable from the Display controller board and check that the connector pins are clean and straight. Check that the thumb screws on the video cable connector are intact.

Reconnect the video cable and lock it properly.



- Make sure that the display has been powerless at least two minutes, then turn the monitor on.

5. Check that the picture on the display screen is positioned correctly. Readjust the picture position, if necessary.



6. Check that the brightness and contrast are adjusted correctly. Readjust them, if necessary.



7. Check that all the colors on the screen are clear.

NOTE: Internal degaussing (demagnetisation) for clearing the colors takes place automatically when the monitor is turned on.

If necessary, perform extra degaussing using an external degaussing coil.



8. Perform electrical safety check and leakage current test.



9. Check that the display functions normally after the performed electrical safety check.



10. Clean the picture tube with a cloth dampened with isopropyl alcohol.

NOTE: Do not use water with any kind of detergent for cleaning the picture tube. Do not use any abrasives or hard objects to remove stains.

Clean the display cover with a cloth dampened with a mild detergent solvent.

NOTE: Do not use strong solvents (e.g. acetone) or aerosol cleaners for cleaning the cover.



- Fill in all necessary documents.

3.2.5 LCD Display, D-LCC10A, Workstation LCD Display, D-LCC10W

Tools needed Central Unit, B-DISP / B-DVGA, M-NE(12)STPR/M-ESTPR/M-ESTP, Anesthesia Keyboard, K-ARK, K-ARK - D-LCC10 Interface cable (Order code 881154) and screwdriver

1. Disconnect and check the LCD display interface cable:

The monitor side connector:

- the connector pins are clean and straight and at about the same height
- the locking screws are intact

The display side connector:

- the screw(s) on the casing is tightened properly
- the connector pins are clean and intact
- the locking screws/claws are intact

Check also that the cable itself is intact.

Leave the cable disconnected.



2. Detach the rear cover by removing the four screws from the corners.

Check internal parts:

- all screws are tightened properly
- all cables are connected properly
- all IC's that are on sockets are attached properly
- there are no loose objects inside the display

Reattach the rear cover.



3. Check external parts:

- the outer cover is intact
- the display screen is intact
- the front panel stickers are intact
- the ComWheel cover is intact and is attached properly
- the ON/STBY -switch and its protector are intact and are attached properly
- the anesthesia keyboard connector is clean and intact
- the LCD interface cable connector is clean and intact
- the block screws for the cable are in place and are tightened properly (if installed)
- the block screw threads are intact (if installed)



4. Check that the ON/STBY -switch changes its state firmly when switching it back and forth. Leave the switch into STBY -position.



- Turn the monitor to stand-by. Install the M-NE(12)STPR/M-ESTPR/M-ESTP to the Central Unit.
- Connect and lock the LCD interface cable to the LCD display and to the used B-DISP/B-DVGA in the monitor.

5. Check that the stand-by LED on the LCD display front panel is lit up (the monitor power cord is connected to the mains).



- Turn the LCD display ON/STBY -switch to ON.



6. Wait until normal monitoring screen appears onto the LCD display. Check that the picture on the LCD display screen is clear and stable. Check also that all the colors are clear.



7. Enter the service menu:

Monitor Setup - Install/Service (password 16-4-34) - **Service** (password 26-23-8)

Take down the information regarding LCD display keyboard software.



8. Select the menu KEYBOARD with the ComWheel.
Highlight the text UPPER LED. Check that the red alarm LED is turning on and off on the LCD display when pressing the ComWheel. Check also the yellow alarm LED by selecting LOWER LED from the menu.



9. Check the LCD display membrane keys.
Press the keys on the LCD display front panel one by one. Check that each key generates a sound from the loudspeaker and the corresponding text in the menu changes from yellow to red.



10. Check the ComWheel.
Turn the ComWheel clockwise and counterclockwise and check that each step generates a sound from the loudspeaker and the corresponding values at the bottom of the menu increase.
Select DUMMY PRESS. Press the ComWheel and check that the press generates a sound and the corresponding value in the menu increases.



- Turn the LCD display ON/STBY -switch to STBY. Connect the Anesthesia Keyboard to the LCD display side panel connector with the interface cable, order code 881154.

11. Turn the monitor back on and check that the Anesthesia Keyboard functions normally through the LCD display.



12. Perform electrical safety check and leakage current test.



13. Check that the LCD display functions normally after the performed electrical safety check.



14. Clean the LCD display with suitable detergent.



Fill in all necessary documents.

3.2.6 LCD Display, D-LCC15

Tools needed Central Unit, B-DISP, Keyboard, K-ANEB/ K-ICUB and screwdriver

1. Disconnect and check the LCD display interface cable:

The monitor side connector:

- the connector pins are clean and straight and at about the same height
- the locking screws are intact

The display side connector:

- the screw(s) on the casing is tightened properly
- the connector pins are clean and intact
- the locking screws/claws are intact

Check also that the cable itself is intact.

Leave the cable disconnected.



2. Detach the rear cover by removing the four screws under the gray pads and two small black screws on the bottom (middle).

Check internal parts:

- all screws are tightened properly
- all cables are connected properly
- all IC's that are on sockets are attached properly
- there are no loose objects inside the display

Reattach the rear cover.



3. Check external parts:

- the outer cover is intact
- the display screen is intact
- the block screws for the cable are in place and are tightened properly (if installed)
- the block screw threads are intact (if installed)



- Connect and lock the LCD interface cable to the LCD display and to the used B-DISP in the monitor. Check that the display power cord is locked to the display.
- Turn the LCD display ON/STBY -switch to ON.



4. Wait until normal monitoring screen appears onto the LCD display. Check that the picture on the LCD display screen is clear and stable.

NOTE! Check that display screen use the XGA mode.

Display Setup - *Install/Service* (password 16-4-34) – *Installation*



5. Contrast and brightness adjustments:

NOTE: The control keys can be unlocked/locked by pressing the -, + and v -keys simultaneously.

Go to MAIN MENU (press ^ or v- button on right side of front panel of display) and select BASIC SETTING.

Select CONTRAST and check that the contrast of the colors is changing with the keys + and -. Leave the adjustment to a suitable level.

Perform the same steps also for BRIGHTNESS.



6. Position adjustments:

Go to MAIN MENU and select POSITION and vertical position (V- POSITON).

Check that the vertical position of the picture is changing with the keys + and - . Leave the adjustment to a suitable level.

Perform the same steps also for horizontal position .

Go back to MAIN MENU



7. Color temperature adjustments:

Select COLOR TEMP MENU and USER.

Check that the colors on the screen are changing with the keys + and - . Leave the adjustment to a suitable level.

Go back the normal screen.



8. Perform electrical safety check and leakage current test.



9. Check that the LCD display functions normally after the performed electrical safety check.



10. Clean the LCD display with suitable detergent.



- Fill in all necessary documents.

3.3 Disassembly and reassembly

3.3.1 LCD Display, V-LCC10 A/W

Disassemble the LCD Display according to the following procedure. Please refer to the exploded view of the LCD Display.

NOTE: Wear a static control wrist strap and soft cotton gloves (dust free) when handling the LCD Display parts. Do not touch connector pins.

1. Place the LCD Display on a flat surface the front side downwards.
2. Remove the screws (4) that are located at the corners of the rear panel.
3. Lift the rear panel gently, disconnect the cable(s) and set the rear panel aside.

Rev. 03, 04

In normal circumstances it is very difficult to keep the LCD Display component and the LCD Display shield free of dust when those are detached from the LCD Display frame. If dust particles remain on the LCD Display component and LCD Display shield surfaces, those may impair the quality of picture on the screen.

In case you need to detach the LCD Display component for repair, if you can provide a dust free environment, follow the instructions below. Otherwise, you may return the whole LCD Display to be repaired at Datex-Ohmeda.

NOTE: If the LCD Display unit is broken, handle it carefully to avoid injury (the LCD Display component and the backlight lamp are made of glass). Wash your hands if you touched liquid crystal which may flow out from a broken LCD Display component.

NOTE: Do not touch, push or rub the exposed soft polarizer. Keep the polarizer clean. In case of accidental mishandling see the instructions following this chapter.

1. The Adapter board and its insulation plate can be detached by disconnecting the cable connectors and removing the screws (4).
2. Remove the screws (8) that are located at the back of the LCD Display unit.
3. The following parts can now be lifted off one by one:
 - the Adapter unit
 - the LCD Display component with the backlight
 - the LCD Display shield
 - the EMC cover with the LCD Display gasket

4. The Command board PCB can be detached by disconnecting the cable connectors and removing the screws (3).

Rev. 00, 01, 02

1. The backlight unit as well as the LCD Display component can be detached by removing the screws (4) at their corners.
2. The Command board PCB can be detached by disconnecting the cable connectors and removing the screws (2).
3. The Power supply board is attached to the rear panel by four (4) screws.

Reassembly of the LCD Display is made in reversed order. Make sure that all connectors are connected properly and cables are not pinched between covers.

Replacing the Backlight Tubes, D-LCC10A/W

1. Disconnect the folio cables (2 pcs) by opening connector's front part in cable direction.
2. Disconnect the other cables from the LCD interface board.
3. Unscrew 5 screws and draw out the lid.
4. Detach the connector of the backlight tube from the inverter board.
5. Unfasten those two screws that holds the backlight tube and draw out it with the clamp.
6. Locate the new backlight tube, fasten the screws, and connect it to the invert board.
7. Attach all the parts, and make sure that the folio cables are connected properly. Make sure that the folio cables are at the bottom and straight before locking the connector.

Adapter board (892424) jumpers on D-LCC10A/W

The right position for jumper X3 is 2-3.

Position for jumper X13 according to cable length:

1-2	0.5...2.5 m
2-3	> 2.5...10.0 m

NOTE: If you change the cable to a long (10 m) or to a short (2.5 m or shorter) one, you may have to change jumper setting inside the display cabin in order to get a clear picture. Let an authorised person to do this.

3.3.2 LCD Display, D-LCC15

Replacing the Backlight Tubes

1. Disconnect the display cables from the Central Unit and lift off the display together with the display stand.
2. Remove the hole covers and 6 screws from the back corners and bottom line of the display case. Separate the front panel from the back panel of the monitor .
3. Remove 8 screws attaching the display case to the front display case. Take display case out of the front cover and place it face down on a nonabrasive clean surface.

4. Locate the bulb replacement slots located on the same side as the display buttons. Remove the copper tape as necessary.
5. Turn the display over and remove the screw fastening the button circuit board to the display case.
6. Turn the display over and remove the screw fastening the slots cover to the display case.
7. Carefully free the wires from display case to access the bulb connector. Separate connector.
8. Locate the screw hole located near the top removal slot on back face of the display case. Remove the screw hole to free the bulb for replacement.
9. Pull the cable on female side of connector out of the display case and continue pulling until the bulb is completely removed.
10. Slide the new replacement backlights into slots on the side of display case.

Reassembly of the LCD Display is made in reversed order. Make sure that all connectors are connected properly and cables are not pinched between covers.

3.3.3 Video Display, D-VMC15

1. The display should not be attempted to disassemble.

3.3.4 Video Display, D-VNC15

11. Disconnect the display cables from the Central Unit and lift off the display together with the display stand.
12. Detach the display by removing the screw from the bottom of the display stand.
13. The display should not be attempted to disassemble.
14. Reassembly is made in reversed order.

3.3.5 Video Display, D-VHC17

1. Disconnect the display signal cable from the Central Unit and the mains power cord from the display stand.
2. Lift off the display together with the display stand.
3. Detach the display from the display stand by disconnecting the display power cable and removing the four screws from the bottom of the stand.
4. The display bracket can be detached by removing the screws from the bottom and then sliding it off.
5. The display should not be attempted to disassemble.
6. Reassembly is made in reversed order.

3.3.6 Video Display, D-VSC21

The display should not be attempted to disassemble.

4 TROUBLESHOOTING

4.1 Video Displays, D-VMC15, D-VNC15, D-VHC17, D-VSC21

Problem	Indicator on the front panel	Treatment
Picture screen is blank	The indicator on the front panel is not illuminated	Check that the power cord is correctly connected to the display and to the power outlet. Check that the monitor is turned on with the ON/STBY switch.
Picture screen is blank	The indicator on the front panel is illuminated	The display might be in stand-by position. Check that the signal cable connector is connected. If the connector is loose, tighten the connector's screws. Check the signal cable's connection pins. If the pins are slightly distorted, use nose pliers to straighten them.

Problem	Treatment
Picture has color defects	Demagnetize the monitor using the display's key/menus. If color defect is repeated without the monitor having been moved, it is possible that the monitor is influenced by a strong interference field (near to a high power cable, for example). Try to find a better location for the monitor or the interference source.
Picture is unreadable	Turn off the monitor for a moment. If the display remains unclear after the restart, the display may be out of synchronization. Try to locate the fault by replacing parts.
Picture is black and white	Check that the signal cable's connector is completely inserted. Turn off the monitor and restart.
'Power Saver' or 'Not connected' message on the screen during an operation.	The video signal is not recognized by the display. Check that the signal cable's connector is inserted properly. Turn off the monitor and restart. If the message remains, try to locate the fault by replacing parts. NOTE: The described messages may appear at a start-up before the monitoring starts! This is normal and does not require further actions.

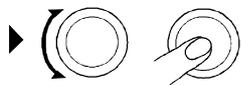
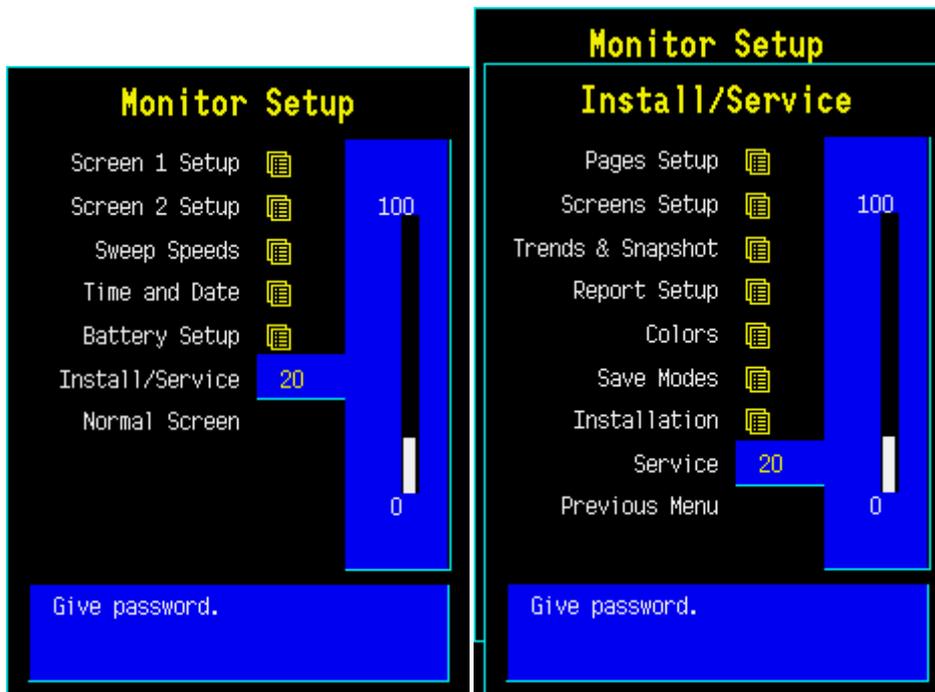
4.2 LCD Displays, D-LCC10, D-LCC15

Problem	Cause	Treatment
No image on screen and no backlight	No power or loose interface cable.	Check LCD - ON/STBY switch position and interface cable
No image on screen, backlight on	Cables may be loose. Display controller board or LCD Interface board failure	Check the items. Replace the board(s) if necessary
Vertical stripes on right side of screen continuously	Jumpers in Display controller board not positioned correctly	Check the jumpers. See Installation section from Part I for details.
Only small portion of CRT screen is displayed on LCD display in zoomed-up form	LCD Display defined as High Resolution Display with the B-DVGA and S-___94.	Use menu (Monitor setup-Install/Service-Screen 2 setup) to change into VGA.
Unstable image	+5 V unstable. Loose cable. Jumpers in Display controller board not positioned correctly or board failure. LCD Interface board failure	Check cable connections. Check the jumpers. Check the board(s) and replace if necessary
Backlight flickering or dim	Backlight connector failure or lamp/LCD Interface board failure	Check the connector. Check the lamp/ LCD Interface board failure. If faulty lamp, replace the whole LCD unit. See chapter 3.3.

4.3 Display Controller Boards, B-DISP

Problem	Cause	Treatment
No image on the screen	No power Cable or display board loose Board or display faulty	Check power on Check cable and board connections Try with another board and/or display
Regular stripes on the picture	Faulty Display controller board	Replace the board.
Part of the screen has wrong colors	Triac board failure	Replace triac board, see Part II/8-Module Frame, F-CU8/Power supply.
Picture disfigured.	Outer magnetic field	Turn the monitor off, wait 10 minutes and turn the monitor on again in order to demagnetize the screen.

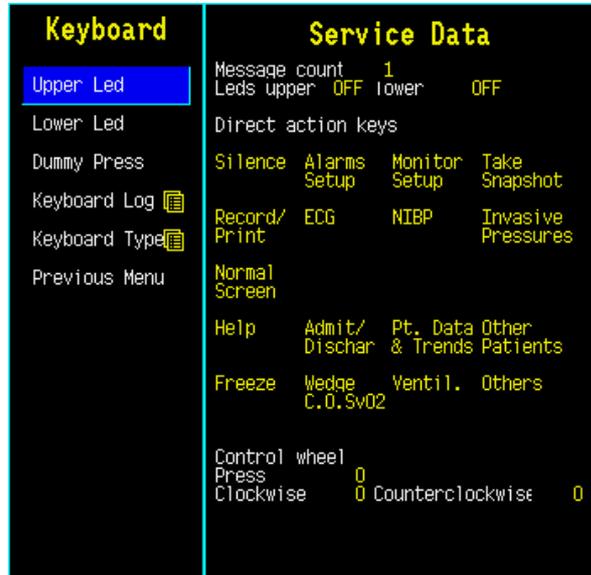
5 SERVICE MENU



1. Press the **Monitor Setup** key.
2. Select **Install/Service** (password 16-4-34).
3. Select **Service** (password 26-23-8) - **Keyboard**.

5.1 Keyboard menu

The service menu for testing the command board functions and for setting the K-ARK and K-ICU types.



Upper Led is for testing the upper alarm LED (red) on the command board. When the text is highlighted, the upper alarm LED can be turned on and off by pressing the ComWheel. **Lower Led** is for testing the lower alarm LED (yellow) on the command board. When the text is highlighted, the lower alarm LED can be turned on and off by pressing the ComWheel.

Dummy Press is for testing the ComWheel. When the text is highlighted, pressing of the ComWheel create a sound from the loudspeaker and the corresponding number on the service data field increase.

Service Data

Message count counts the number of messages that are sent out to the main CPU board. **Leds upper** and **lower** indicate the states of the alarm LEDs on the command board.

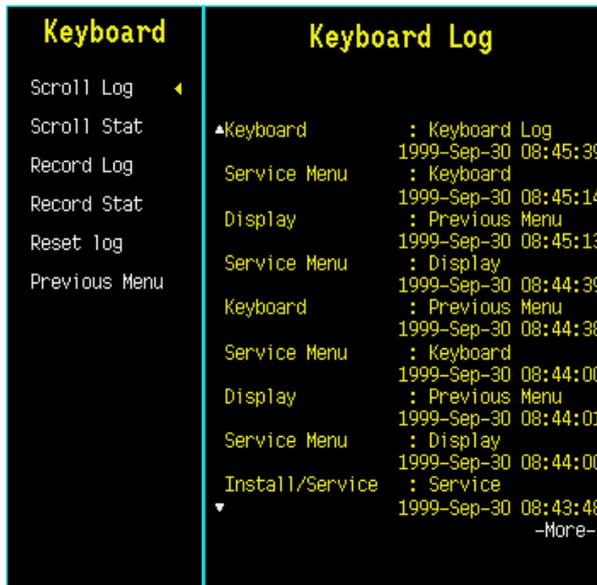
Direct action keys texts are indications to the command board membrane keys. When a key on the command board is pressed, the corresponding text in the menu changes its colour.

Control wheel, Press counts the ComWheel pressings.

Control wheel, Clockwise and **Counterclockwise** the ComWheel turnings.

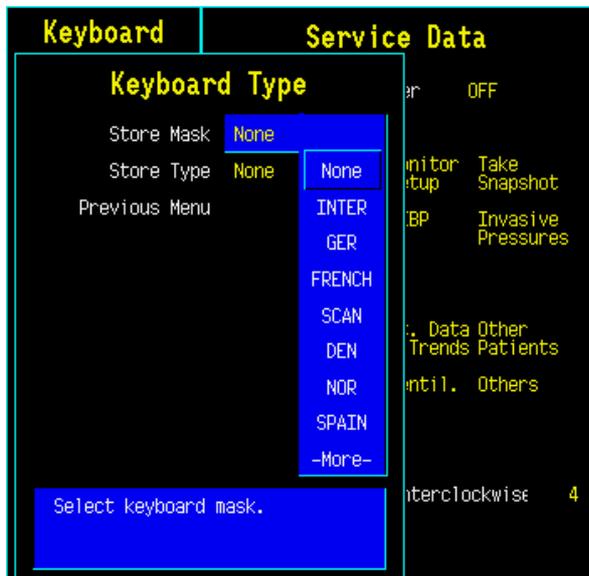
Since shows the date and the time of the last run time reset.

5.1.1 Keyboard Log



All the keyboard presses and the commands given by the ComWheel are recorded in the Keyboard Log. The keyboard log is saved in the permanent memory of the monitor. The length of the log is 1150 events. The log is FIFO type.

5.1.2 Keyboard Type



Store Mask A selection for setting the anaesthesia keyboard's language. The selected language determines the outcome of the lower keypad.

Store Type is for setting the keyboard's type;

COM = Command Board

ARK = Anaesthesia Keyboard

AIC = Information Center Keyboard

NOTE: The settings should be checked if the controller board is replaced. If settings are changed, the new settings will not be valid until the next start-up.

6 SPARE PARTS

NOTE: Only changed part numbers are listed under later revisions. To find the desired part: check first the list of the revision that corresponds your device. If the part is not listed there, check the previous revision, etc. until you find the right number.

* this part is recommended for stock

Item numbers refer to the exploded view.

6.1 14" Video Display, D-VHC14

Item	Item description	Order No.
-	Display cover, D-VHC14 (w/o stickers)	902661
-	Monitor cable, D-VHC14	*902660
-	Display power cord, D-VHC14 (EUR/USA)	545581
-	Service Manual for D-VHC14 (Hitachi)	572772
-	Display tray	879474
-	Display rear plug cover	879475

6.2 15" Video Display, D-VMC15

Item	Item description	Order No.
-	Facia assembly, D-VMC15	8001566
-	Cover assembly, D-VMC15	8001567
-	Washer tube fixing, D-VMC15	8001568
-	Mains cable, D-VMC15	8001569
-	Clip retaining IEC inlet, D-VMC15	8001570
-	Video lead, D-VMC15	8001571
-	Bracket assembly rear unit, D-VMC15	8001572

6.3 15" Video Display, D-VNC15

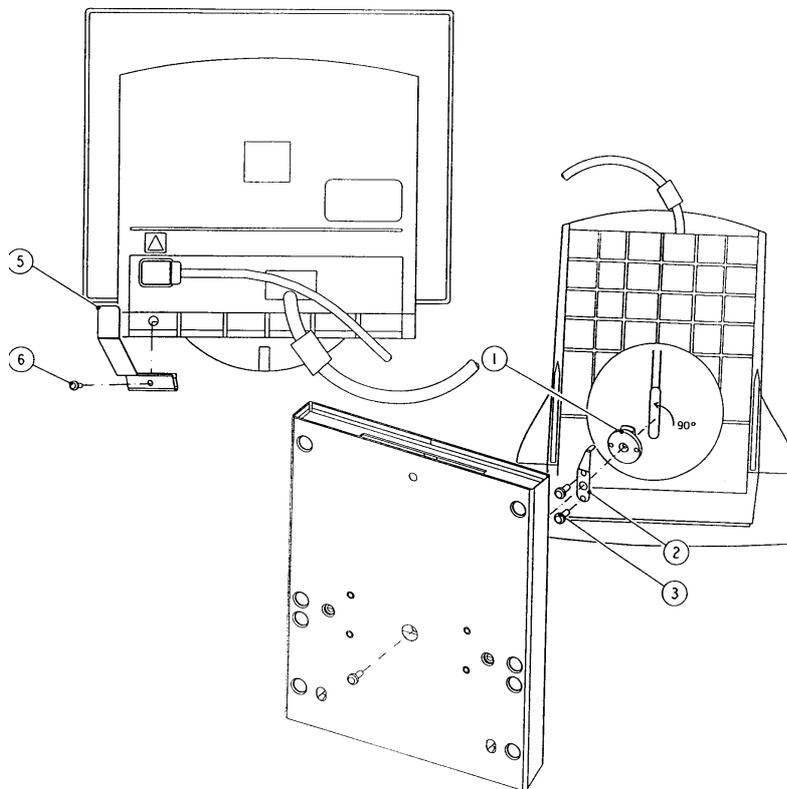


Figure 4 Exploded view, D-VNC14

6.3.1 15" Video Display, D-VNC15 Rev. 00

Item	Item description	Order No.
-	STBY switch cover, D-VNC15 (Rev. 00-02)	889325
-	Display tray	889162
1	Locking washer, D-VNC15 (Rev. 00-02)	889164
2	Motion limiter for 889164	889165
3	Cross cylinder head screw M6x16	61775
5	Power cord guard, D-VNC15 (Rev. 00-02)	889704
6	Cross cylinder head screw M3x8	61722

6.3.2 15" Video Display, D-VNC15 Rev. 01

Item	Item description	Order No.
-	STBY switch, D-VNC15 (Rev. 00-02)	51590

6.3.3 15" Video Display, D-VNC15 Rev. 02

Item	Item description	Order No.
-	Blank command board assembly	892426 ¹⁾

6.3.4 15" Video Display, D-VNC15 Rev. 03

Item	Item description	Order No.
5	Power cord guard, D-VNC15 (Rev. 03)	893714
-	STBY switch cover, D-VNC15 (Rev. 03)	893112
-	Bracket for D-VNC15 (Rev. 03)	892800
-	Display tray	891811
-	Cross cylinder head screw M6x16	61775
-	Blank command board assembly	893723 ¹⁾

6.4 17" Video Display, D-VHC17

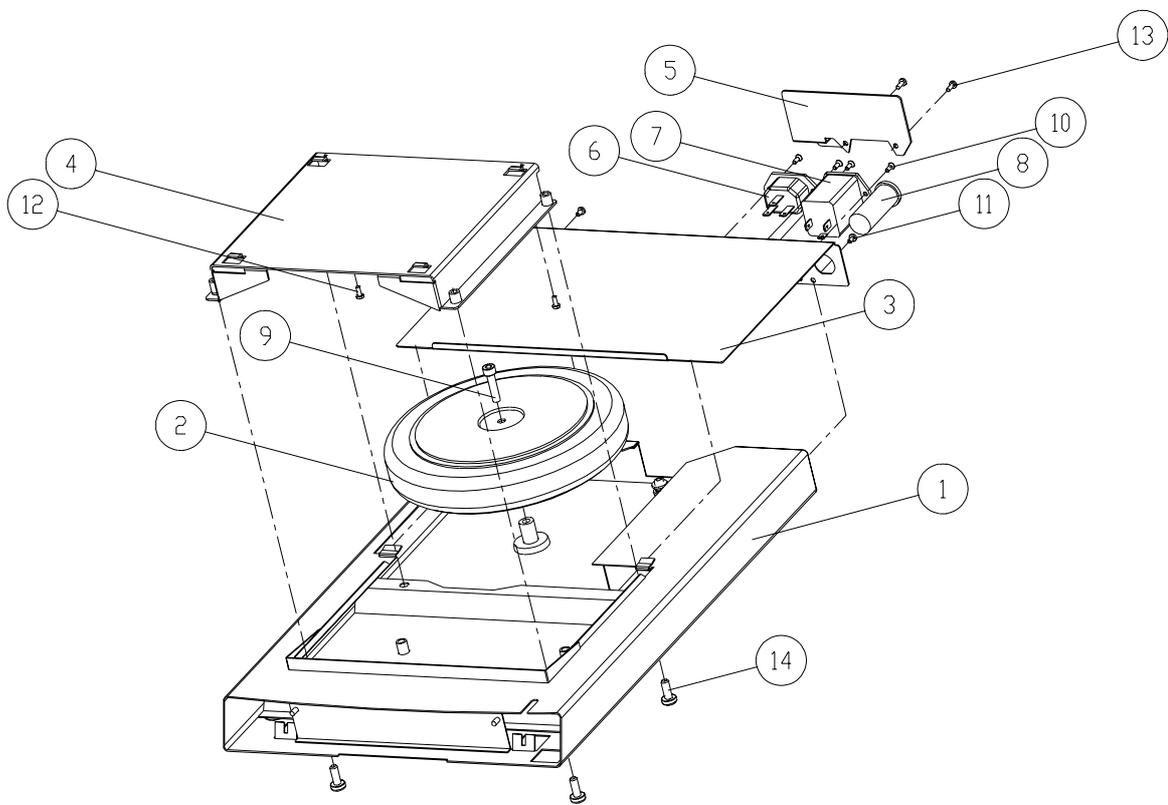


Figure 5 Exploded view, Video Display, D-VHC17

6.4.1 17" Video Display, D-VHC17 Rev. 00

Item	Item description	Order No.
-	Fuse T3.15A (for 220-240V)	*51119
-	Fuse 5A slow (for 100-120V)	*511382
-	Fuse T2.5A	*51118
-	Blank command board assembly	892426 ¹⁾
1	Display tray, D-VHC17	891978
2	Transformer 220-240V	26143

2	Transformer 100-120V	26108
3	Display tray cover, D-VHC17	892396
4	Display bracket, D-VHC17	891979
5	Power cord guard, D-VHC17	892791
6	Display power outlet	54027
7	Mains power receptacle	540140
8	Fuse holder	511792
9	Hexagon cylinder head crew M6x25	61923
10	Cross cylinder head screw M3x6	61621
12	Cross cylinder head screw M3x8	61722
13	Cross cylinder head screw M3x12	61736
14	Cross cylinder head screw M6x16	61775

6.4.2 17" Video Display, D-VHC17 Rev. 01, 02

Item	Item description	Order No.
-	Blank command board assembly	893723 ¹⁾

* = the part is recommended for stock

¹⁾ Note: The display tray can fitted with a blank command board assembly in case the display is used as a secondary display. The blank command board assembly does not contain the ON/STBY - switch.

6.5 21" Video Display, D-VSC21

6.5.1 21" Video Display, D-VSC21 Rev. 00

No spare parts available.

6.5.2 21" Video Display, D-VSC21 Rev. 01

No spare parts available.

6.5.3 21" Video Display, D-VSC21 Rev. 02

No spare parts available.

6.6 LCD Display, D-LCC10

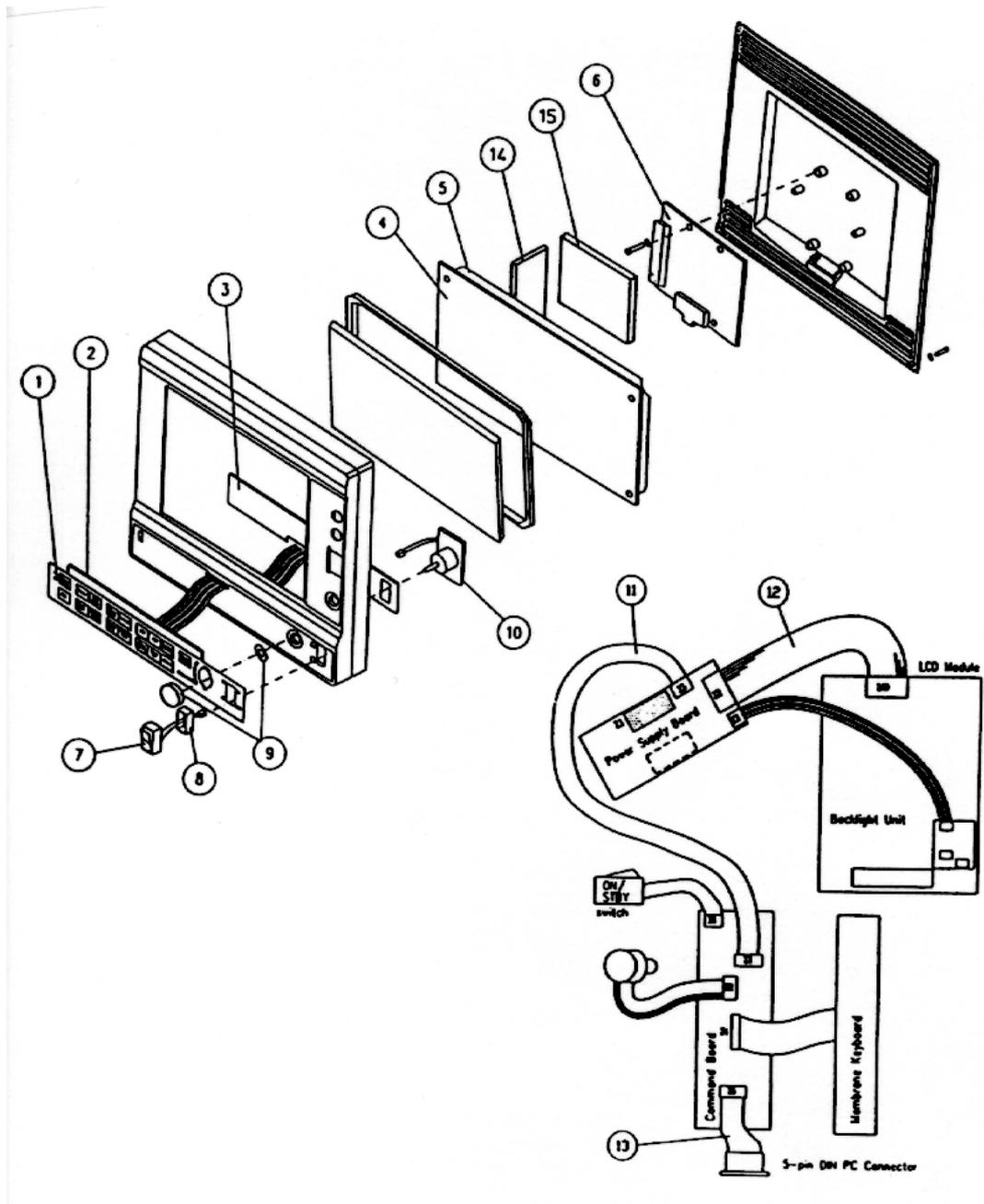


Figure 6 Exploded view, LCD Display, D-LCC10

6.6.1 LCD Display, D-LCC10 Rev. 01

Item	Item description	Order No.
-	External cable 2.5 m (LCD Display to AS/3 AM)	(881966) Use 885517
2	Membrane keyboard, AS/3 AM/CM	879373
3	Command board PCB, D-LCC10 (Rev. 01-02)	*(883022) Use 894173
4	LCD Module, AS/3 AM/CM	572770

5	Backlight unit, AS/3 AM/CM	*883929
6	Power supply board, D-LCC10 (Rev. 01-02)	*881808
7	ON/STBY switch	*879871
8	ON/STBY switch protector	881431
9	ComWheel cover and spring	879191
10	Rotary wheel	879872
11	Internal cable (Power to Keyboard)	881807
12	Internal cable (Power to LCD)	881721
13	Internal cable (Personal Computer)	881826
14	Inverter for backlight unit, AS/3 AM/CM	*572776
15	Adapter board for backlight unit, AS/3 AM/CM	883269

6.6.2 LCD Display, D-LCC10 Rev. 02

Item	Item description	Order No.
-	External cable 2.5 m (LCD Display to AS/3 AM)	885517
-	External cable 6 m (LCD Display to AS/3 AM)	884976

6.6.3 LCD Display, D-LCC10 Rev. 03

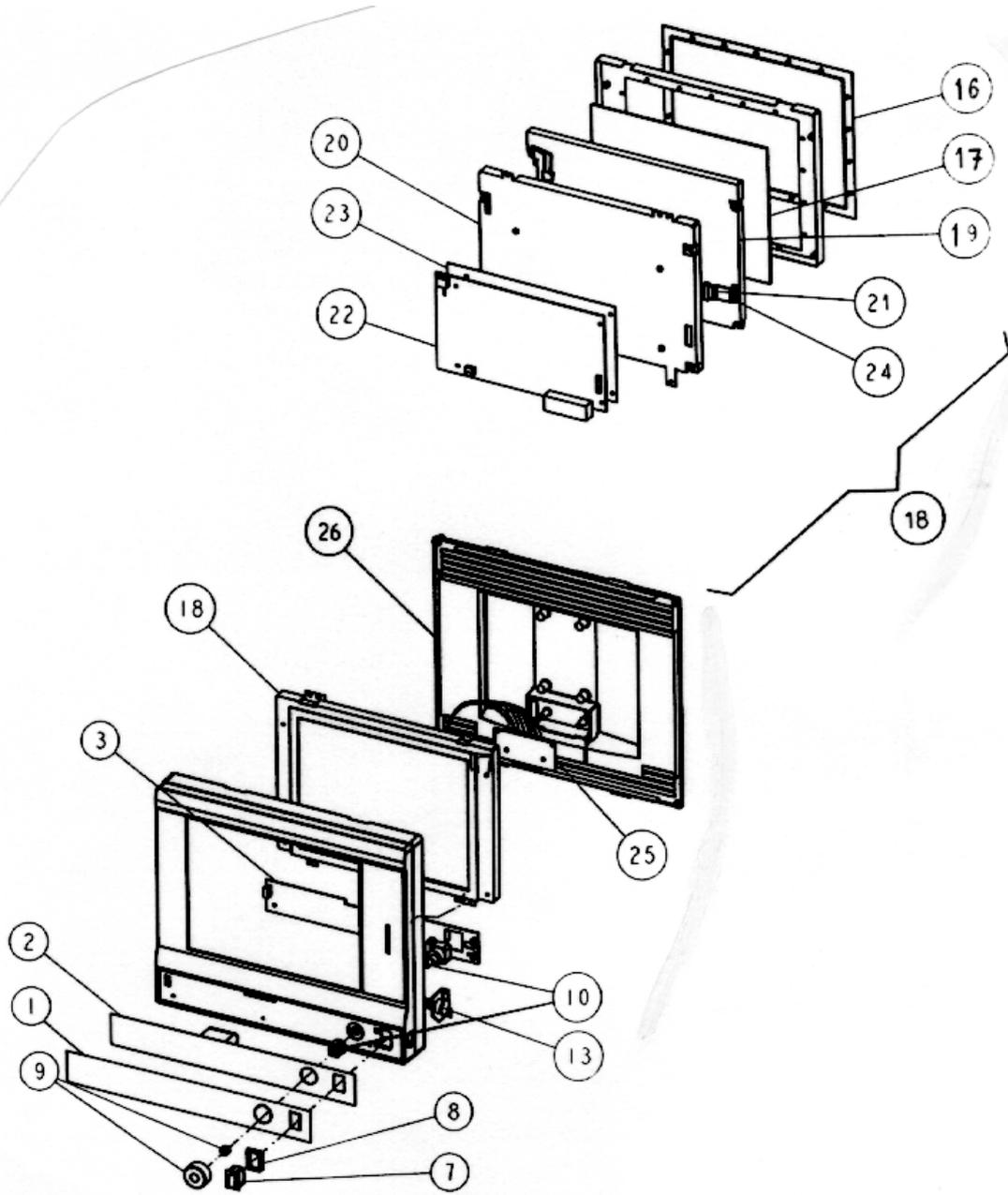


Figure 7 Exploded view, LCD Display, D-LCC10 Rev. 03

LCD Display, D-LCC10 Rev. 03

Item	Item description	Order No.
-	Command board software	*887874
-	Backlight for LCD display 572784	*(572790) Use 894909
-	External cable 2.5 m (LCD Display to AS/3 AM)	888525
-	External cable 10 m (LCD Display to AS/3 AM)	888643
3	Command board PCB, AS/3 AM/CM	*(886821) Use 894173

16	LCD display gasket, AS/3 AM/CM	890123
17	LCD display shield, AS/3 AM/CM	572787
18	LCD display unit, complete, AS/3 AM/CM	887737
19	LCD display (contains backlight), AS/3 AM/CM	572784
20	Adapter unit, AS/3 AM/CM	887125
21	Flat cable	71409
22	Adapter board, AS/3 AM/CM	*887840
23	Insulation plate	887739
24	Connector board (LCD), AS/3 AM/CM	888220
25	Connector board (frame), D-LCC10 (Rev.03)	888222
26	Rear cover, D-LCC10 (Rev. 03)	889367

6.6.4 LCD Display, D-LCC10 Rev. 04

New front panel stickers , see "[FrontPanelStickeforLCDdisplays](#)"

6.6.5 LCD Display, D-LCC10A, LCD Display, D-LCC10C, Workstation LCD Display, D-LCC10W
Rev. 00

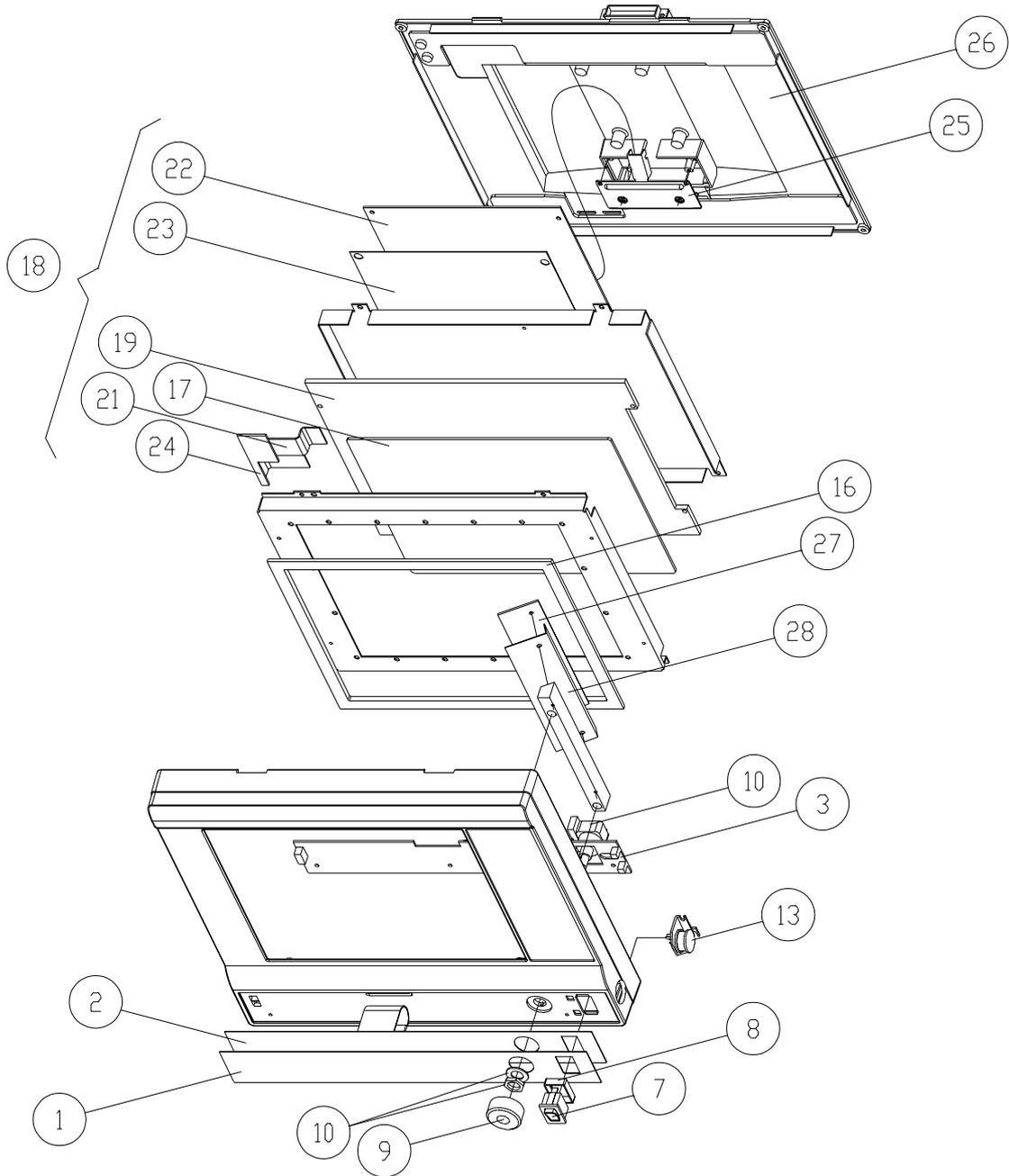


Figure 8 Exploded view, LCD Display, D-LCC10A, LCD Display, D-LCC10C, Workstation LCD Display, D-LCC10W Rev. 00

Item	Item description	Order No.
-	Replacement fluorescent lamp for LCD display 572788	*572791
-	External cable 2.5 m (LCD Display to AS/3 AM)	888525
-	External cable 10 m (LCD Display to AS/3 AM)	888643
2	Membrane keyboard, AS/3 AM/CM	879373
3	Command board PCB, D-LCC10A/C/W	*894173
7	ON/STBY switch	*879871
8	ON/STBY switch protector	881431
9	ComWheel cover and spring	879191
10	Rotary wheel	879872
13	K-ARK connector with cable	889370
16	LCD display gasket	890123
17	LCD display shield	892677
18	LCD display unit, complete, AS/3 AM/CM	891571
19	LCD display (contains backlight), AS/3 AM/CM	572788
21	Inverter cable	891970
22	Adapter board, AS/3 AM/CM	*892424
23	Insulation plate for 892424	891975
24	Connector board, LCD	892421
25	LCD unit cable	893247
26	Rear cover, D-LCC10A, D-LCC10C	892375
26	Rear cover, D-LCC10W	893699
27	Inverter for LCD display 572788	*572789
28	Inverter shield	892677

6.6.6 Front Panel Sticker for LCD displays

Command Board sticker, item No. 1

Adaptation	D-LCC10 (Rev. 01) Order No.	D-LCC10 (Rev. 02-03) Order No.	D-LCC10 (Rev. 04) Order No.
-23- (Eng)	879479	885878	891663
-26- (Fin)	--	888860	891669
-31- (Jpn)	--	888306	892080
-33- (Ger)	880469	885879	891664
-40- (Spa)	--	886272	891667
-41- (Swe)	--	885946	891670
-42- (Dnk)	--	--	892197
-43- (Fre)	880161	885880	891665
-44- (Dut)	--	886043	891666
-46- (Ita)	--	886751	891668

Adaptation	D-LCC10A (Rev. 00) Order No.	D-LCC10W (Rev. 00) Order No.	D-LCC10C (Rev. 00) Order No.
-23- (Eng)	893069	893069	893484
-26- (Fin)	893070	893070	893490
-31- (Jpn)	--	--	--
-33- (Ger)	893072	893072	893485
-40- (Spa)	893073	893073	893488
-41- (Swe)	893074	893074	893491
-42- (Dnk)	893075	893075	893492
-43- (Fre)	893076	893076	893486
-44- (Dut)	893077	893077	893487
-46- (Ita)	893078	893078	893489
-47- (Nor)	893550	893550	--

6.6.7 S/5 Front Panel Sticker for LCD displays

Adaptation	D-LCC10A (Rev. 01) Order No.	D-LCC10W (Rev. 01) Order No.
..01..EN	898328	898328
..01..FI	898335	898335
..01..JA	898339	898339
..01..DE	898329	898329
..01..ES	898332	898332
..01..SV	898336	898336
..01..DA	898338	898338
..01..FR	898330	898330
..01..NL	898331	898331
..01..IT	898333	898333
..01..NO	898333	898337
..01..PT	898334	898334

Side panel sticker

Adaptation	D-LCC10 (Rev. 01-04) Order No.	D-LCC10A (Rev. 00) Order No.	D-LCC10W (Rev. 00) Order No.	D-LCC10C (Rev. 00) Order No.
All	881729	891993	891993	891993

S/5 Side panel sticker

Adaptation	D-LCC10A (Rev. 01) Order No.	D-LCC10W (Rev. 01) Order No.
All	898312	898312

6.7 LCD Display, D-LCC15

Item	Item description	Order No.
-	Back light, D-LCC15	8001592
-	Video Cable , D-LCC15	8001593
-	Power cable, D-LCC15	8001594
-	Power, D-LCC15	8001595

6.8 Display Controller Boards, B-DISP, B-DVGA, B-DHIGH

Item	Item description	Order No.
-	Wide rear panel for B-DISP	*893872
-	Grounding plate	885398
-	Block screw for cables	546096

7 EARLIER REVISIONS

For more service information on the earlier revisions, please refer to:

LCD-Display revision 01
LCD-Display revision 02

Service Manual p/n 882580
Service Manual p/n 885930

This manual supports all later revisions.

APPENDICES A-G

SERVICE CHECK FORM

Video Display, D-VHC14

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cover and picture tube	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	2. Cover screws	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
2. Tray	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	3. Power cord	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
3. Video cable	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>				
Notes	_____						

6. Position adjustments	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	7. Power cord	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
7. Colors	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>				
Notes	_____						

9. Electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	10. Functioning after electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
10. Final cleaning	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>				

Notes	_____

Used Spare Parts	_____
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Signature	_____
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SERVICE CHECK FORM

Video Display, D-VMC15

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cover and picture tube	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	2. Power cord locking	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
2. Power cord	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	3. Video cable	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
Notes _____							

5. Power ON LED	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	6. Contrast and brightness	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
7. Position and size adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	8. Color adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
9. Light sensor	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				
Notes _____							

14. Electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	15. Functioning after electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
15. Final cleaning	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				

Notes	_____
Used Spare Parts	_____

Signature	_____
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SERVICE CHECK FORM

Video Display, D-VNC15

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
3. Cover and picture tube	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	4. Power cord locking	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
4. Power cord	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	9. Video cable	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
Notes _____							

10. Power ON LED	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	11. Contrast and brightness	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
12. Position adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	13. Size adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
14. Shape adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	6. Tilt adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
15. Degaussing	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	7. Color adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
16. Contrast mode	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				
Notes _____							

16. Electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	16. Functioning after electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
17. Final cleaning	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				

Notes	_____
Used Spare Parts	_____

Signature	_____
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SERVICE CHECK FORM

Video Display, D-VNC17

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cover and picture tube	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	2. Power cord locking	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
2. Power cord connector	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	3. Fuses and fuse holders	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
3. Video cable	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				
Notes	_____						

6. Power ON LED	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	7. Contrast and brightness	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
7. Position adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	8. Size adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
8. Shape adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	9. Rotation adjustment	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
9. Degaussing	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	10. Color adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
Notes	_____						

14. Electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	15. Functioning after electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
15. Final cleaning	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				

Notes _____

Used Spare Parts _____

Signature _____

SERVICE CHECK FORM

Video Display, D-VSC21

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____		Date



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cover and picture tube	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	2. Screws	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
2. Power cord	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	3. Video cable	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
Notes _____							

5. Position adjustments	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	6. Brightness and contrast	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
6. Colors	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				
Notes _____							

8. Electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	9. Functioning after electrical safety check	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>
9. Final cleaning	<input style="border: 1px solid green;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>	<input style="border: 1px solid red;" type="checkbox"/>				

Notes	_____

Used Spare Parts	_____	_____	_____
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Signature	_____
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SERVICE CHECK FORM

LCD Display, D-LCC10A, LCD Display, D-LCC10C, Workstation LCD Display, D-LCC10W

Customer	_____		
Service	_____	Display type and revision	S/N _____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cable	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	2. Internal parts	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
3. External parts	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	4. ON/STBY -switch	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
Notes	_____						

5. Stand by -LED	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	6. LCD display picture	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
6. Keyboard software	KB _____		_____				
7. Alarm LEDs	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	7. Membrane keys			
8. ComWheel	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	8. Anesthesia keyboard interface			
Notes	_____						

12. Electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	13. Functioning after electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
13. Final cleaning	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>				

Notes	_____
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Used Spare Parts	_____
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Signature	_____
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SERVICE CHECK FORM LCD Display, D-LCC15

Customer	_____		
Service	_____	Display type and revision	_____
		S/N	_____
Service engineer	_____	Date	_____



OK = Test OK



N.A. = Test not applicable



Fail = Test Failed

	OK	N.A.	Fail		OK	N.A.	Fail
1. Cable	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	2. Internal parts	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
3. External parts	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	3. ON/STBY- switch and standby LED	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
Notes _____							

4. Display mode	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	5. Brightness and contrast	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
6. Position adjustmenst	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	7. Colors	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
Notes _____							

8. Electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	9. Functioning after electrical safety check	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>
10. Final cleaning	<input style="width: 20px; height: 20px; border: 1px solid green;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>	<input style="width: 20px; height: 20px; border: 1px solid red;" type="checkbox"/>				

Notes	_____

Used Spare Parts	_____	_____	_____
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Signature	_____
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